ABSTRACT OF THE DISCLOSURE

A performance optimized RAID Level 3 storage access controller with a unique XOR engine placement at the host/network side of the cache. The invention utilizes multiple data communications channels and a centralized cache memory in conjunction with this unique XOR placement to maximize performance and fault tolerance between a host network and data storage. Positioning the XOR engine at the host/network side of the cache allows the storage devices to be fully independent. Since the XOR engine is placed in the data path and the parity is generated in real-time during cache write transfers, the bandwidth overhead is reduced to zero. For high performance RAID controller applications, a system architecture with minimal bandwidth overhead provides superior performance.